USER MANUAL

On-Line UPS

PowerWalker VFI 6000RT LCD
PowerWalker VFI 10000RT LCD

Uninterruptible Power Supply System

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1. Introduction

This Online RT (Rack/Tower) Series is an uninterruptible power supply incorporating double-conversion technology. It provides perfect protection specifically for computer equipment, communication systems to computerized instruments. It protects your sensitive electronic equipment from basic power problems such as power failures, power sags, power surges, brownout, and line noise.

Power outages can occur when you least expect them and power quality can be erratic. These power problems have the potential to corrupt critical data, destroy unsaved work sessions, and damage hardware - causing hours of lost productivity and expensive repairs.

With the Online RT UPS, you can safely eliminate the effects of power disturbances and guard the integrity of your equipment. The UPS's flexibility to handle an array of network devices makes it the perfect choice to protect your LANs, servers, workstations, and other electrical equipment.

Online RT UPS as Rack installation:

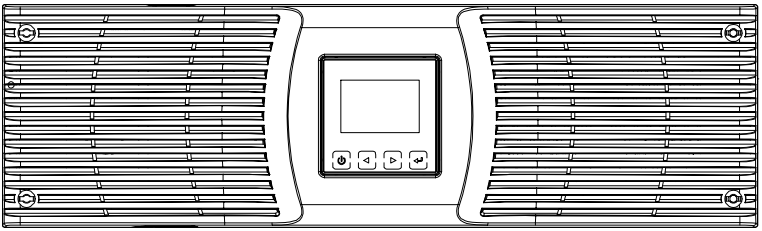


Figure1: Online RT 6K UPS

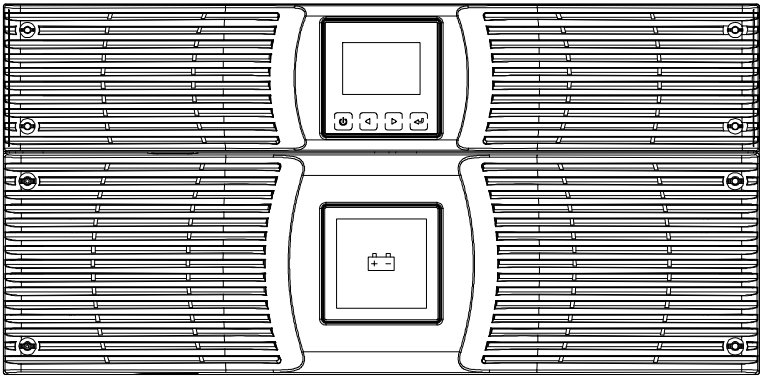


Figure2: Online RT 10K UPS

Online RT UPS as Tower installation.

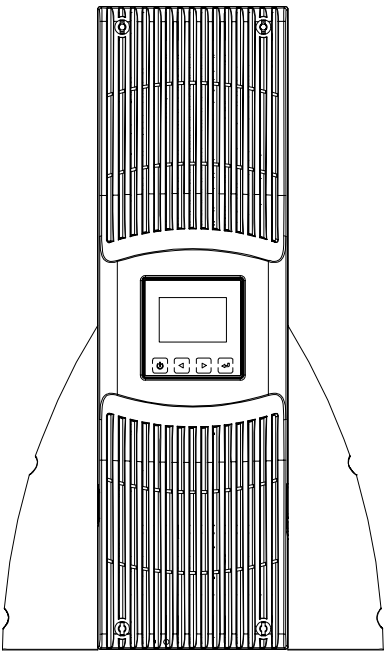


Figure3: Online RT 6K UPS

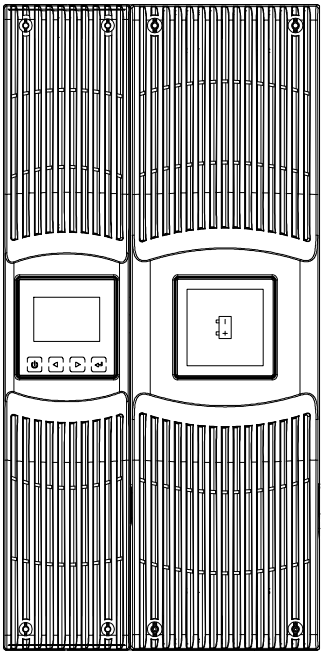


Figure4: Online RT 10K UPS

Providing outstanding performance and reliability, the UPS's unique benefits include:

- Online UPS design with pure sine wave output.
- True online double-conversion technology with high power density, utility frequency independence, and generator compatibility.
- Intelligent Battery Management technology that uses advanced battery management to increase battery service life, optimize recharge time.
- Selectable High Efficiency mode of operation.
- Start-on-battery capability for powering up the UPS even if utility power is not available.
- Standard communication options: one RS-232 communication port, one USB communication port.
- Optional connectivity cards with enhanced communication capabilities.
- Extended runtime with up to four Extended Battery Modules (EBMs) per UPS.
- Optional installation method - Rack & Tower.
- Firmware is easily upgraded without a service call.
- Remote shutdown control through the Remote Emergent Power-off (REPO) port.
- Maintenances are simplified by allowing the safe replacement of batteries without powering down the UPS.
- Parallel with another Online RT UPS, max amount is 2.
- Optional Rack Slider.
- PDU is standard configuration with maintenance bypass switch.

2. Safety Warnings

CAUTION:

Before performing the procedures in this document, read and follow the safety instructions and important regulatory information in your Safety, Environmental, and Regulatory Information document.

IMPORTANT SAFETY INSTRUCTIONS FOR EACH STEP SAVE THESE INSTRRUCTIONS.

2.1 Installation

★ Condensation may occur if the UPS is moved directly from a cold to a warm environment. The UPS must be absolutely dry before being installed. Please allow an acclimatization time of at least two hours.

★ Do not install the UPS near water or in damp environment.

★ Do not install the UPS where it would be exposed to direct sunlight or near heat.

★ Do not block ventilation openings in the UPS's housing.

★ Place cables in such a way that no one can step on or trip over them.

★ UPS has provided earthed terminal, in the final installed system configuration, equipotent earth bonding to the external UPS battery cabinets.

★ An integral single emergency switching device which prevents further supply to the load by the UPS in any operation mode should be provided in the building wiring installation.

★ An appropriate disconnect device as short-circuit backup protection should be provided in the building wiring installation.

★ For three-phase equipment connection to an IT power system, a four-pole device which disconnect all phase conductors and the

neutral conductor should be provided in the building wiring installation.

★ This is permanently connected equipment , it must be installed by qualified maintenance personnel.

★ **For permanently connected equipment:** make sure that a readily accessible disconnect device is incorporated in the building installation wiring.

To reduce the risk of fire, connect only to a circuit provided with branch circuit overcurrent protection with an ampere rating in accordance with the IEC/EN 60934 standard or your local electrical code and have a contact air gap of at least 3 mm.

Uninterruptible power supply output power	240V
6K	40 amp 2-pole circuit breaker
10K	63 amp 2-pole circuit breaker

★ You can connect four extended battery module to the uninterruptible power supply.

★ Earth connection is essential before connecting to the building wiring terminal.

2.2 Operation

★ Do not disconnect the earth conductor cable from the UPS or the building wiring terminals in any time since this would cancel the protective earthing of the UPS system and all connected loads.

★ The UPS output terminal block may be electrically active even if the UPS system is not connected to the building wiring terminal.

★ In order to completely disconnect the UPS, firstly press the OFF button, then disconnect the mains lead.

★ Ensure that no liquid or other foreign objects can enter the UPS.

★ The UPS can be operated by any individuals without previous experience.

2.3 Maintenance, servicing and faults

- The UPS operates with hazardous voltages. Maintenance should be carried out only by qualified maintenance personnel.
- Caution - risk of electric shock. Even after the unit is disconnected from the mains power supply (building wiring terminal), components inside the UPS are still connected to the battery which are potentially dangerous.
- Before carrying out any kind of service and/or maintenance, please disconnect the batteries. Verify that no current is present and no hazardous voltage exists in the capacitor or BUS capacitor terminals.
- Batteries must be replaced only by qualified personnel.
- Caution - risk of electric shock. The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Verify that no voltage is present before servicing!
- Batteries have a high short-circuit current and pose a risk of shock. Take all precautionary measures specified below and any other measures necessary when working with batteries:
  - remove all jewellery, wristwatches, rings and other metal objects
  - use only tools with insulated grips and handles.
- When changing batteries, replace with the same quantity and the same type of batteries.
- Do not attempt to dispose of batteries by burning them. It could cause explosion.
- Do not open or destroy batteries. Effluent electrolyte can cause injury to the skin and eyes. It may be toxic.

- Please replace the fuse only with the same type and of the same amperage in order to avoid fire hazards.
- Do not dismantle the UPS, except the qualified maintenance personnel.

2.4 Transport

- Please transport the UPS only in the original packaging (to protect against shock and impact).

2.5 Storage

- The UPS must be stockpiled in the room where is ventilated and dry.

2.6 Standards

*** Safety**	
IEC/EN 62040-1-1	
*** EMI**	
Conducted Emission.....:IEC/EN 62040-2	Category C2
Radiated Emission.....:IEC/EN 62040-2	Category C2
***EMS**	
ESD.....:IEC/EN 61000-4-2	Level 4
RS.....:IEC/EN 61000-4-3	Level 3
EFT..... :IEC/EN 61000-4-4	Level 4
SURGE..... :IEC/EN 61000-4-5	Level 4
CS..... :IEC/EN 61000-4-6	Level 3
Power-frequency Magnetic field.... :IEC/EN 61000-4-8	Level 3

Low Frequency Signals.....:IEC/EN 61000-2-2
Warning: This is a product for commercial and industrial application in the second environment-installation restrictions or additional measures may be needed to prevent disturbances.

3. Installation

This chapter explains:

- Equipment inspection
- Unpacking the cabinet
- Checking the Accessory
- UPS setup and installation
- Connecting the internal battery
- Connecting the EBM(s)
- Installation requirements

3.1 Inspecting the Equipment

If any equipment has been damaged during shipment, keep the shipping cartons and packing materials for the carrier or place of purchase and file a claim for shipping damage. If you discover damage after acceptance, file a claim for concealed damage.

Note: Check the battery recharge date on the shipping carton label. If the date has passed and the batteries were never recharged, do not use the UPS. Contact your service representative.

3.2 Unpacking the Cabinet

CAUTION: Unpacking the cabinet in a low-temperature environment may cause condensation to occur in and on the cabinet. Do not install the cabinet until the inside and outside of the cabinet are absolutely dry (hazard of electric shock).

CAUTION: The cabinet is heavy. Use caution to unpack and move the cabinet.

Be careful when moving and opening the carton. Leave the components packaged until ready to install. To unpack the system:

Step 1:

Open the outer carton and remove the accessories packaged with the cabinet (see Figure 5&6).

Online RT 6KUPS:

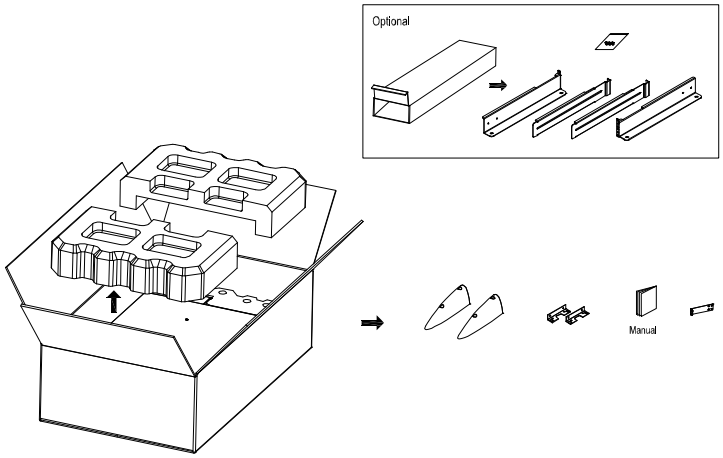


Figure5: Unpacking the Cabinet of 6K UPS

Online RT 10K UPS

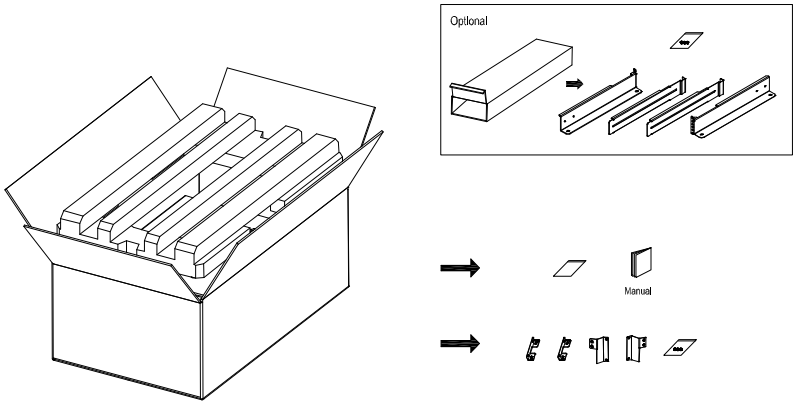


Figure6: Unpacking the Cabinet of 10K UPS

CAUTION:

The cabinet is heavy. Lifting the cabinets into the rack requires a minimum of two people.

Step 2:

With one person on each side, carefully lift the cabinet out of the outer carton using the handles on the cardboard and set it on a flat, stable surface (see Figure 7&8).

Place the cabinet in a protected area that has adequate airflow and is free of humidity, flammable gas, and corrosion.

Lifting the Cabinet:

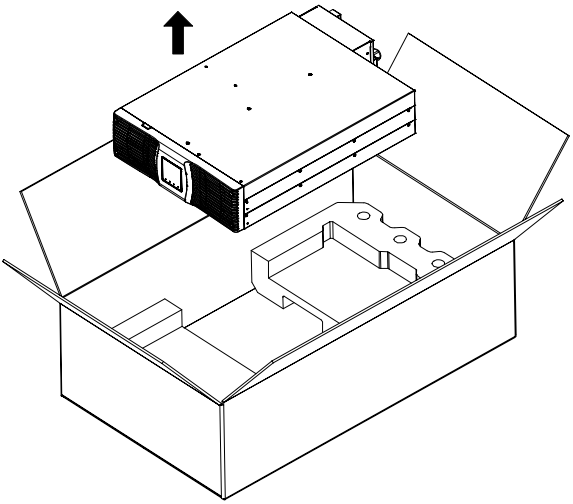


Figure7: Lifting the Cabinet of 6K UPS

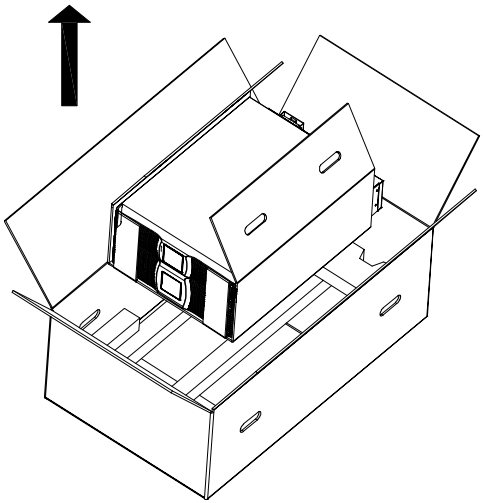


Figure8: Lifting the Cabinet of 10K UPS

Step 3:

Discard or recycle the packaging in a responsible manner, or store it for future use.

3.3 UPS Rear Panel

This section shows the rear panel of the Online RT models.

6K model:

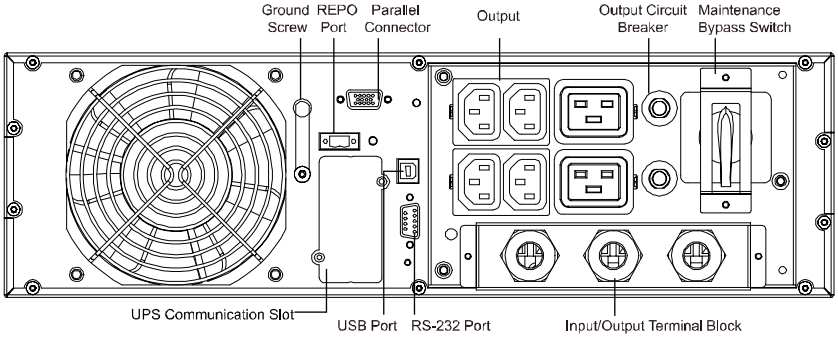


Figure 9: Online RT 6K Rear Panel

10K model:

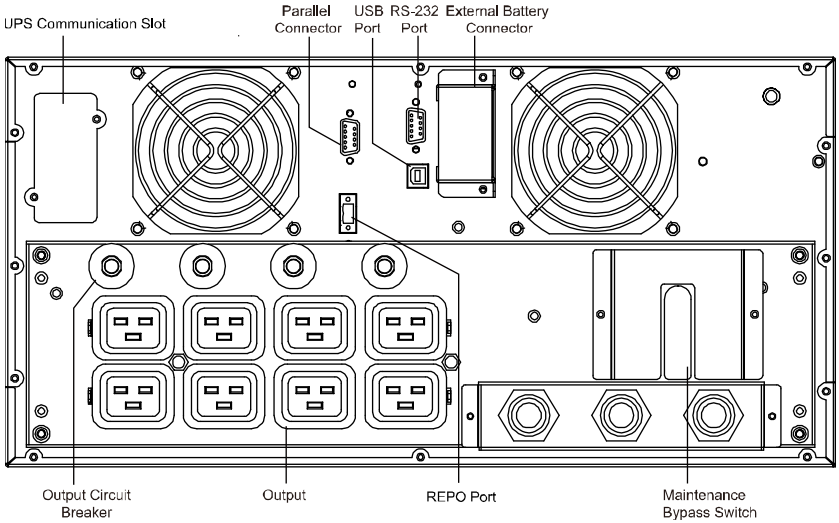


Figure 10: Online RT 10K Rear Panel

3.4 UPS Front Panel

This section shows the front panel of the Online RT UPS. The Online series have the same LCD panel and the same control button.

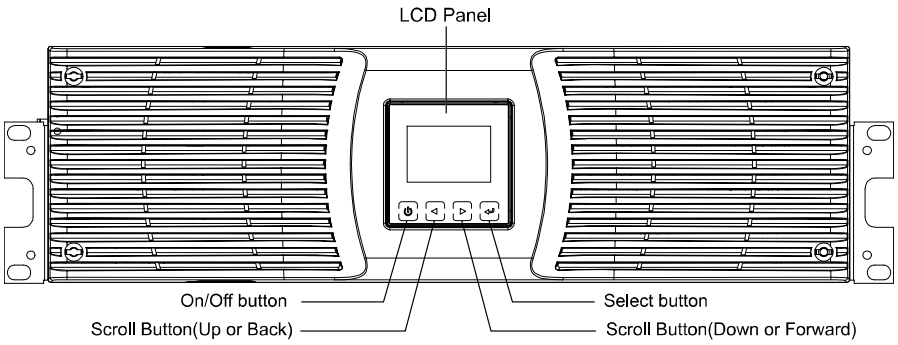


Figure 11: The Online RT UPS Front Panel

3.5 Rackmount Setup

CAUTION:

The cabinet is heavy, so:

1) Remove the battery tray from the UPS before lifting.
2) Lifting the cabinets into the rack requires a minimum of two people.

CAUTION: Removing the batteries should be performed or supervised by personnel with knowledge of batteries and the requieres precautions. Keep unauthorized personnel away from batteries.

CAUTION: If installing an EBM, install the EBM directly below the UPS.

3.5.1 To install the UPS and EBM in a rack:

1. Open the sfront panel and put it above the UPS.

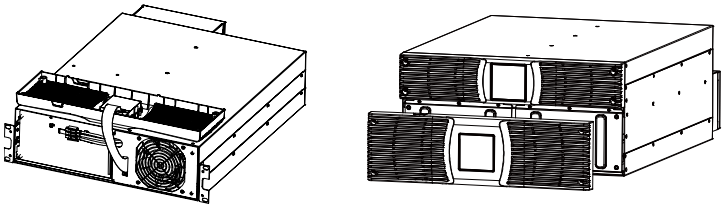


Figure 12. Open the front panel (left: 6K Model, right: 10K Model)

2. Remove the battery protection plate (see Figure13):

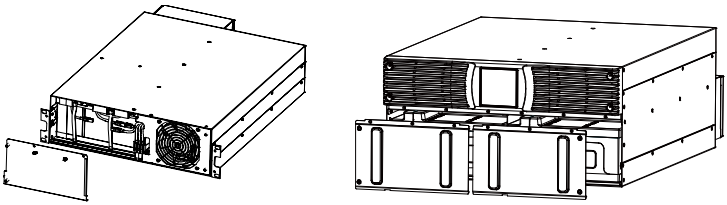


Figure 13. Removing the Battery Protection Plate

3. Pull the battery tray out using the plastic tabs and remove the battery tray.(see Figure14)

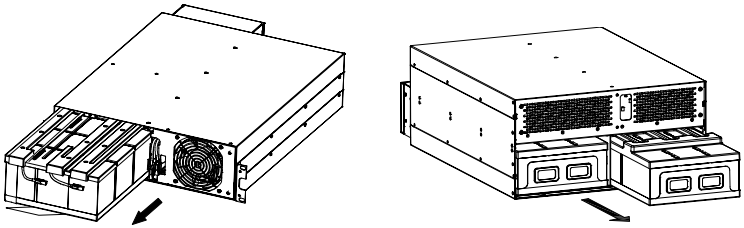


Figure 14: Removing the Battery Tray

4. Install the PDU's ears to the UPS

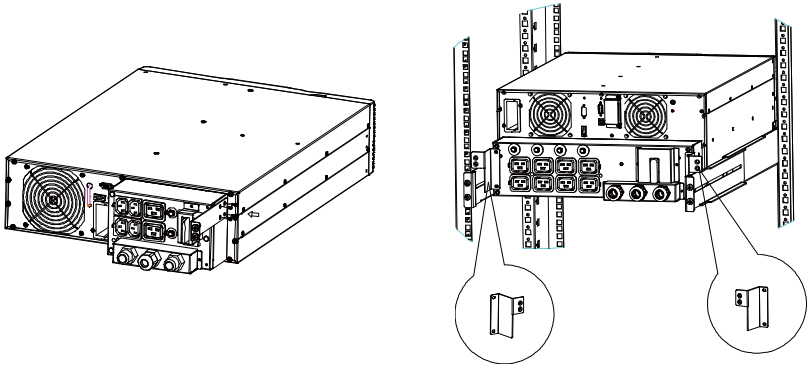


Figure 15. Install the PDU's ears to the UPS

5. Select the proper holes in the rail for positioning the cabinet in the desired location in the rack. Locate the rails at the bottom of the 3U space allocated for the each UPS and EBM.

6. Install the sliding rails in the rack, then install the UPS in the sliding rail.

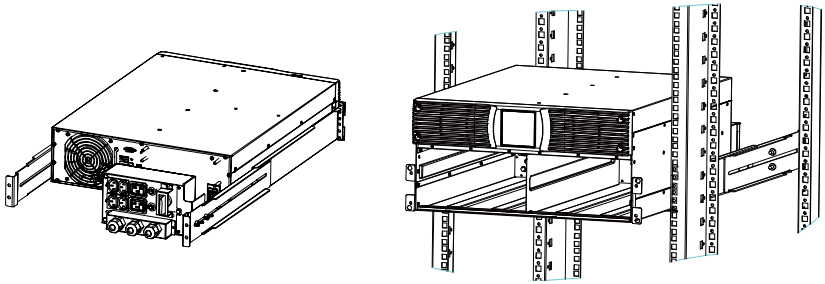


Figure 16. Install the sliding rails

7. Install the battery pack and battery protection plate, then replace the front panel.

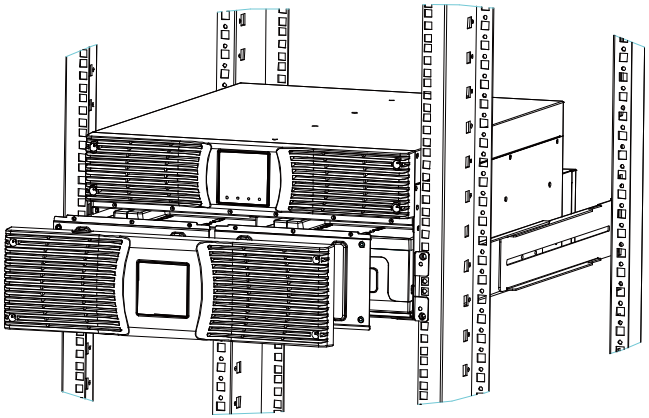


Figure 17. Installing the Cabinet

8. Replace the battery tray, and connect the internal battery connector, then replace the protection plate and the front pannel.

9. If installing additional UPSs, repeat Step 1 through Step 8 for each cabinet.

3.5.2 Installing the EBMs

Note: A little of arcing may occur when connecting an EBM to the UPS. This is normal and not harmed. Plug the EBM cable into the UPS battery connector quickliy and firmly.

To install EBMs:

6K Model:

1. Plug the EBM cable into the UPS battery connctor

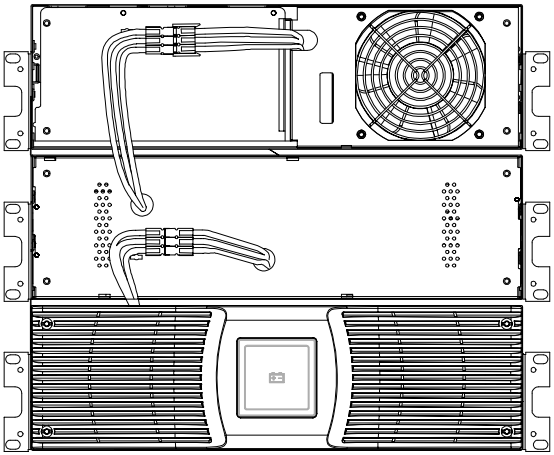


Figure 18. Plug the EBM cable into the UPS battery connctor

2. Replace UPS's front pannel and EBM's front pannel.

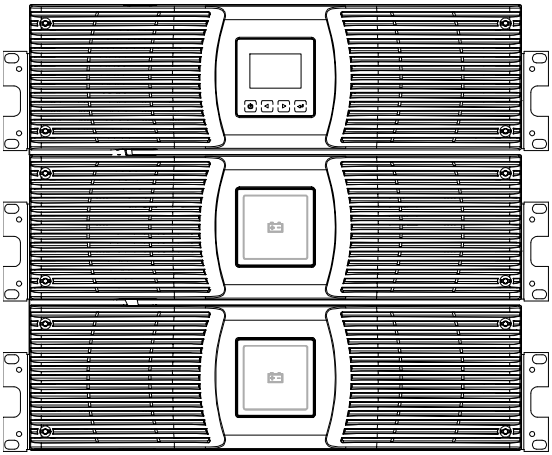


Figure 19. Replace UPS's front pannel and EBM's front pannel.

CAUTION:

Please connect the EBM to protective ground with 8 AWG wire for EBM model firstly.

10K Model:

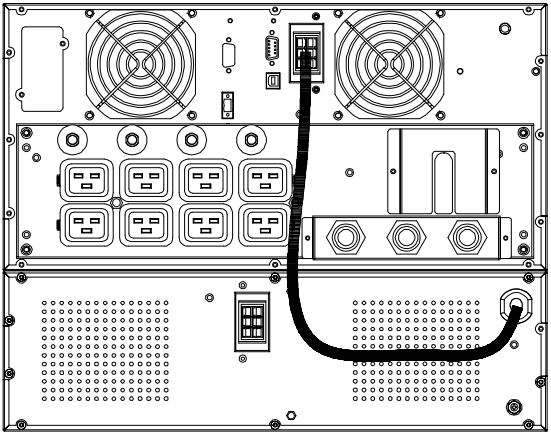


Figure 20. Plug the EBM cable into the UPS battery conector

3.6 Tower Setup

Tower setup as below:

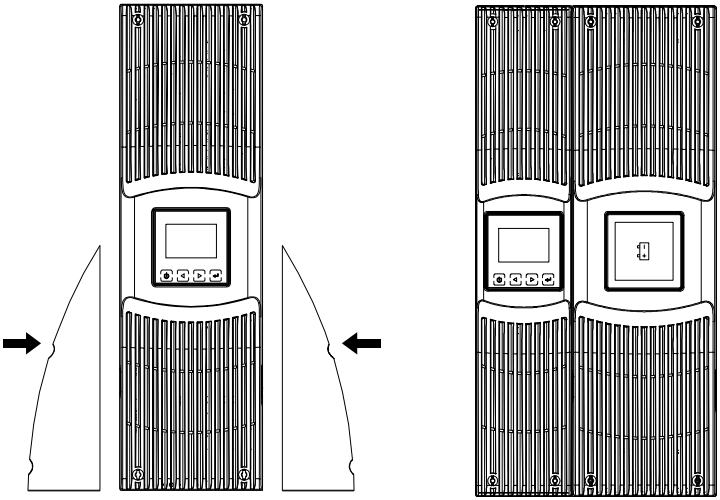
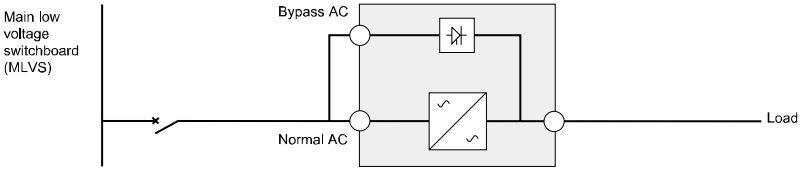


Figure 21. Tower setup

3.7 Installation of UPS with AC inputs

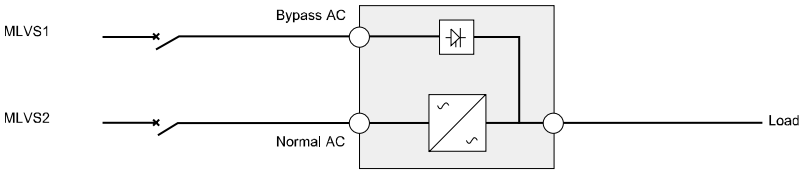
CAUTION: Online 6K/10K series support that the UPS can have separate AC inputs. So before connecting wires of seperate AC inputs, you should confirm that their earthing systems are identical. Otherwise, a transformer is necessary.

UPS with common Normal and Bypass AC inputs



UPS with separate Normal and Bypass AC inputs

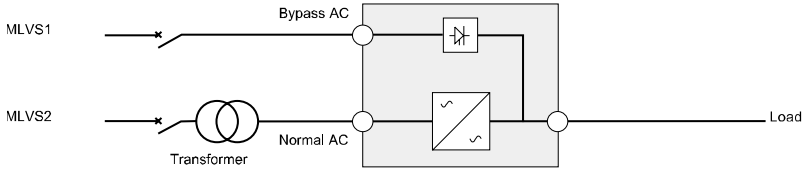
➢ Earthing systems are identical:



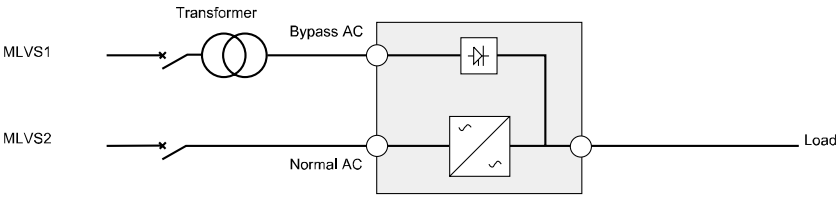
➢ Earthing systems are separate:

Three different installations can be choosen:

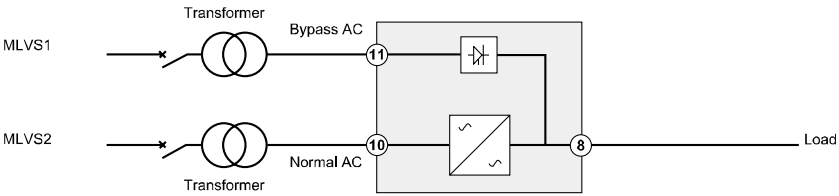
1) Transformer in the Normal AC input.



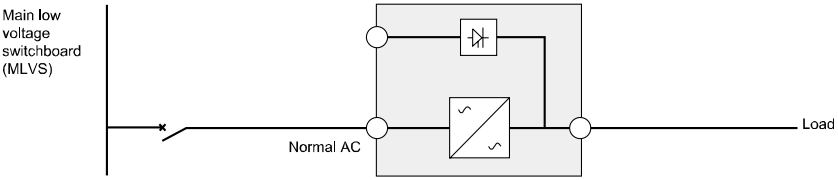
2) Transformer in the Bypass AC input.



3) Both of them have transformer



Frequency converter (without Bypass AC input)



4. Power cables connection & Startup

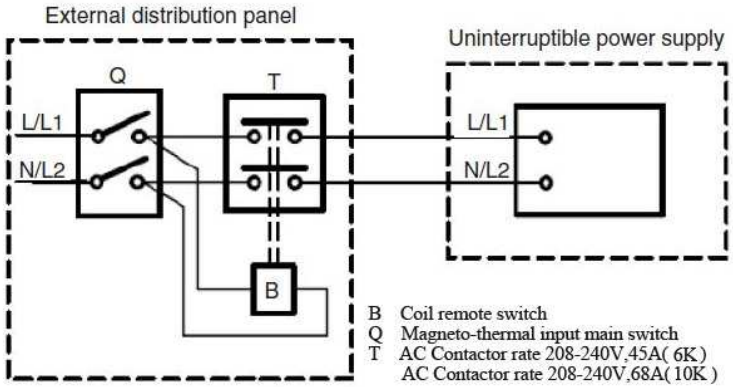
This section explains:

- Access to terminal block
- Common input sources connection
- Separate input sources connection
- Frequency converter connection
- UPS initial startup

Use cable cross section and protective device specification

Model	6K	10K
Protective earthing conductor Min cross section	4mm^2 (10AWG)	6mm^2 (8AWG)
Input L, N, G Min conductor cross section	4mm^2 (10AWG)	6mm^2(8AWG)
Input fuse	60A	80A
Output L,N, Min conductor cross section	4mm^2 (10AWG)	6mm^2(8AWG)
External Battery Cabinet Positive Pole(+), Negative pole(-), Neutral Pole Min conductor cross section	4mm^2 (10AWG)	2.5mm^2*2 (12AWG*2)
External Battery Cabinet Fuse in Positive Pole(+), Negative pole(-), Neutral Pole	60A	80A

The UPS does not have an automatic protection device against current backfeed. It is suggested to install an external isolating device a show in the following illustration. Check for hazardous voltage between all terminals before operating on this circuit.



4.1 Access to terminal block

Access to terminal block: remove the 2 screws of the terminal block cover

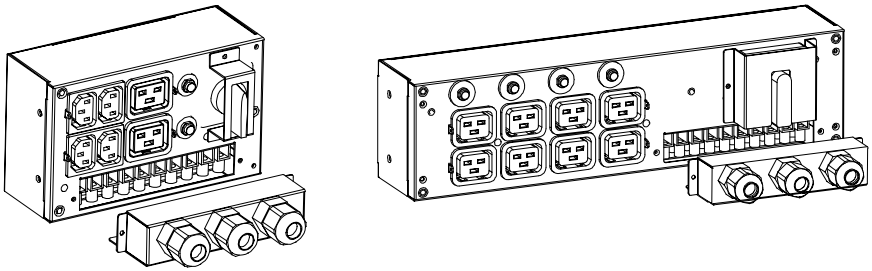


Figure 22. PDU of 6K/10K

4.2 Common input sources connection

CAUTION:

This type of connection must be carried out by qualified electrical personnel

CAUTION:

Always connect the earthing wire first

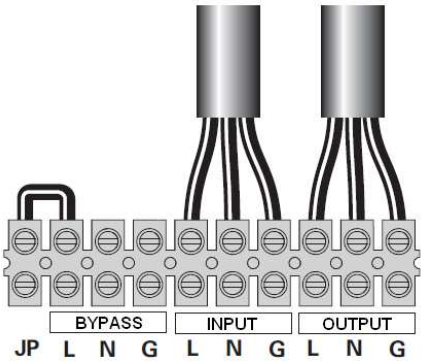


Figure 23. Common input sources conection

4.3 Separate input sources connection

CAUTION:

This type of connection must be carried out by qualified electrical personnel.

CAUTION:

Always connect the earthing wire first.

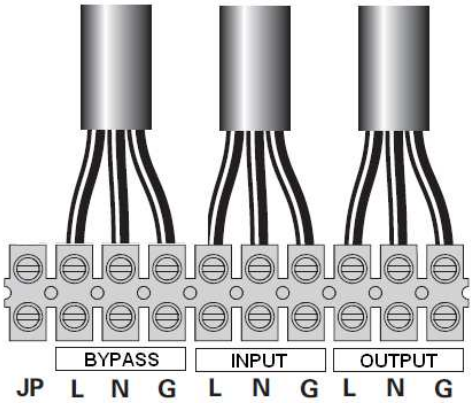


Figure 24. Separate input sources connection

4.4 Frequency converter connection

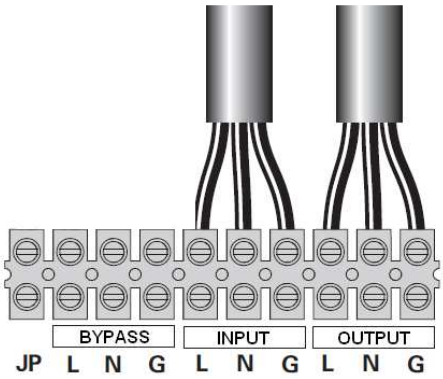


Figure 25. Frequency converter connection

4.5 UPS Initial Startup

To start up the UPS:

Verify that the total equipment ratings do not exceed the UPS capacity to prevent an overload alarm.

1. Verify that the internal batterties are connected.
2. If optional EBMs are installed, verify that the EBMs are connected to the UPS.
3. Set the upstream circuit breaker (not included) to the “I” position (ON).

   The UPS display panel illuminates and shows a status of “Welcome”
4. Verify that the UPS transfers to Bypass mode.
5. Press the ⏻ button on the UPS front panel for at least three seconds.

   The UPS display “ ⏻ ” with flashing.
6. Check the UPS display for active alarms or notices. Resolve any active alarms before continuing. See “Troubleshooting”

7. Verify that the UPS is operating normally and any loads are powered.
8. If optional EBMs are installed, see “Configuring the UPS for EBMs” to set the number of installed EBMs.
9. To change any other factory-set defaults, see “Operation”

   Online series recommends setting the date and time.

   At initial startup, the UPS sets system frequency according to input line frequency (input frequency auto-sensing is enabled by default). After initial startup, auto-sensing is disabled until manually re-enabled by output frequency setting.

   At initial startup, inut voltage auto-sensing is disbaled by default. When manually enabled by output voltage setting, at the next AC startup the UPS sets output voltage according to input line voltage. After the subsequent startup, auto-sensing is disabled until manually re-enabled by output voltage setting.
10. If you installed an optional REPO, test the REPO function:

    Activate the external REPO switch. Verify the status change on the UPS display.

    Deactivate the external REPO switch and restart the UPS.

4.6 Parallel operation

4.6.1 Brief introduction of the redundancy

The parallel structure is 1+1.As long as the UPS is equipped with parallel cables, up to 2 UPSs can be connected in parallel to configure a sharing and redundant output power.

4.6.2 Parallel installation

1) Users need to use a specialty 15-pin communication cable for this series, which should have 15 cores, corresponding stitches and shield, as the UPS parallel cable. The length of the parallel cable is appropriate to be less than 3 m.
2) Strictly follow the stand-alone wiring requirement to perform the input wiring of each UPS.

3) Connect the output wires of each UPS to an output breaker panel.
4) Connect each output breaker to a main output breaker and then to the loads.
5) Each UPS need an independent battery bank.
6) Please refer to the wiring diagram in the next page, and select suitable breaker.

■ **The output wiring requirement is as follows:**

- When the distance among the UPSs in parallel and the breaker panel is less than 10 meters, the length difference between input and output cable of the UPSs is required to be less than 20%.
- When the distance among the UPSs in parallel and the breaker panel is farther than 20 meters, the length difference between input and output cable of the UPSs is required to be less than 5%.

4.6.3 Operation and maintenance

1) For normal operating, follow the single operating requirement.
2) Startup: The units transfer to INV mode simultaneously as they start up sequentially in Line mode.
3) Shutdown: the units are shut down on INV mode in a sequent way. When the last one completes the shutdown action, each unit will turn off the inverter simultaneously and transfer to Bypass mode.

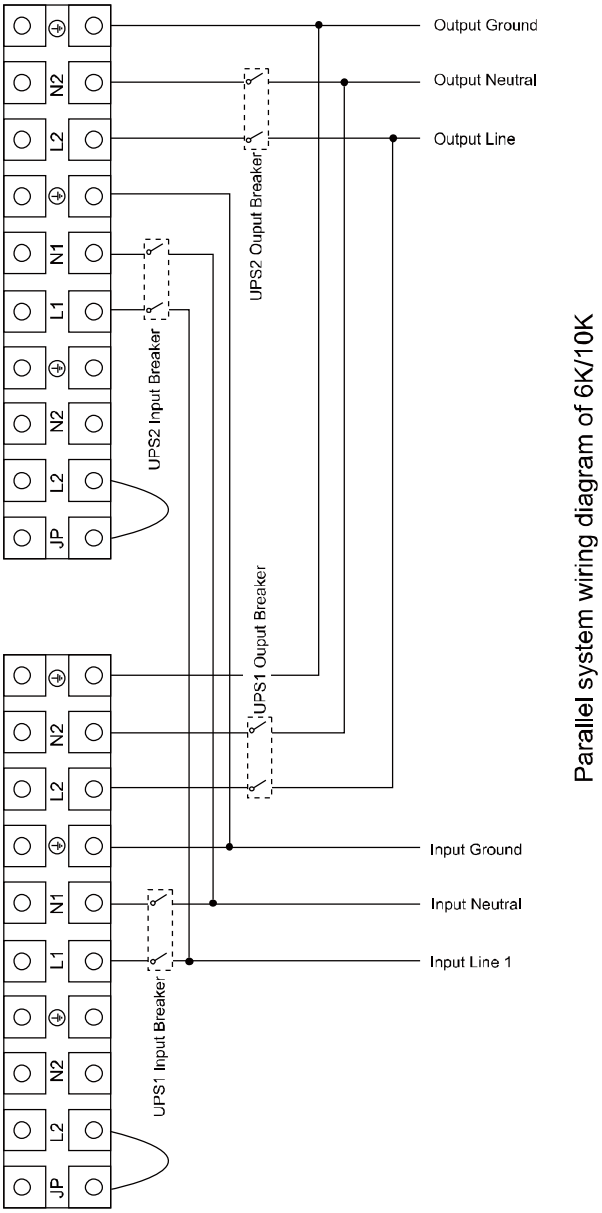


Figure 26. Parallel systerm wiring diagram of 6K/10K

5. Operation

5.1 Display Panel

The UPS has a four-button graphical LCD with dual color backlight. Standard back-light is used to light up the display with white text and a blue background. When the UPS has a critical alarm, the backlight changes the text to dark amber and the background to red. See Figure below

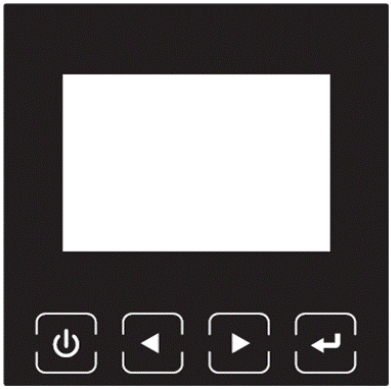


Figure5-1. Innova 6-10K Rack On-line UPS Control Panel

Table 5-1 Control Button Functions

The Button	Funtion	Illustration
	Power on	When the unit is no power and has connected with battery, press this button for >100ms&<1s to power on
	Turn on	When the unit is powered on and in Bypass mode, press this button for >1s to turn on
	Turn off	When the unit has been turned on, press this button for >3s to turn off

	Enter main menu	When displaying default UPS status summary screen, press this button for >1s to enter the main menu tree
◀	Exit main menu	Press this button for >1s to exit the present menu to default system status display menu without executing a command or changing a setting
	Scroll up	Press this button for >100ms&<1s to scroll up the menu option
▶	Scroll down	Press this button for >100ms&<1s to scroll down the menu option
	Enter next menu tree	Press this button for >100ms&<1s to select the present menu option, or enter next menu, but do not change any setting
↵	Select one menu option	Press this button for >100ms&<1s to select the present menu option, or enter next menu, but do not change any setting
	Confirm the present setting	Press this button for >1s to confirm the edited options and change the setting

Table 5-2 Buzzer definition

UPS condition	**Buzzer status**
Fault active	Continuous
Warning active	Beep every second
Battery output	Beep every 4 seconds, if battery low, buzzer Beep every second
Bypass output	Beep every 2 minutes

The UPS provides useful information about UPS itself, load status, events, measurements, identification, and settings through the front panel display.

After powering on, the LCD will display Welcome logo for several seconds and then enter to the default page which shows the UPS status summary. The display automatically returns to the default UPS status summary screen when no button has been pressed within 15 minutes.

On the UPS status summary screen it provides the following information:

- Status summary, including mode and load
- Alarm status, if any are present
  Notes: alarm including fault and warning information
- Battery and charger status, including battery voltage, charge level and charger status
- Running information and running time

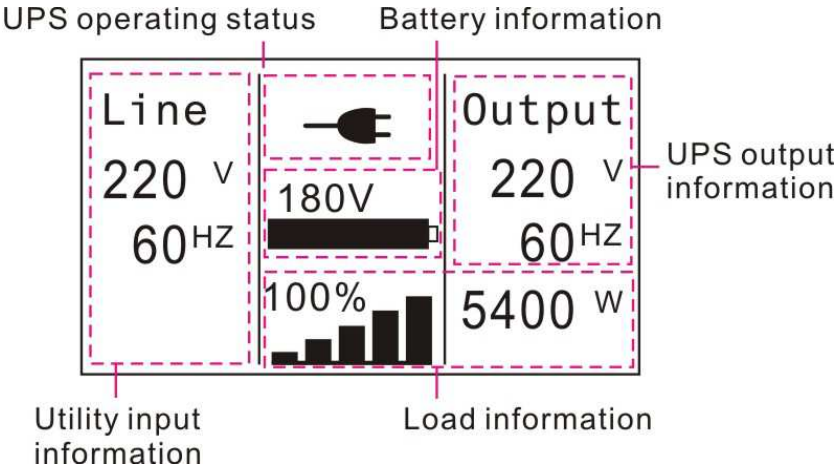


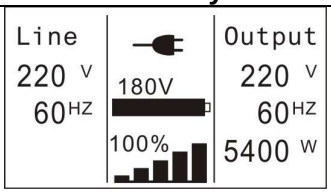
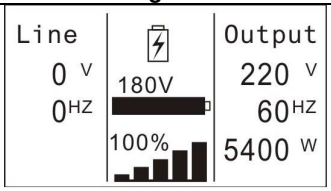
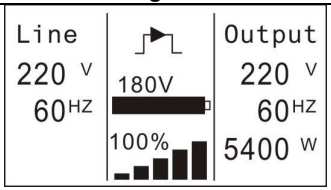
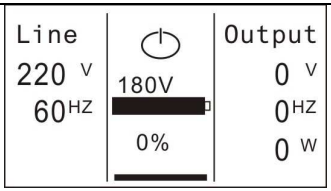
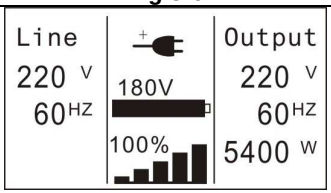
Fig. 5-2 The default LCD display

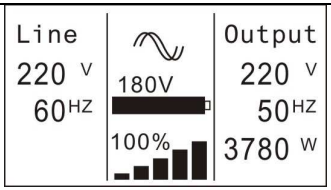
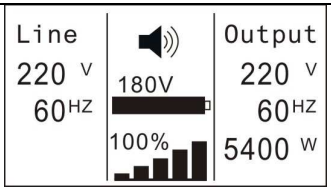
The more detailed operation of LCD is illustrated in the chapter of 5.4

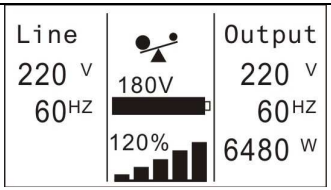
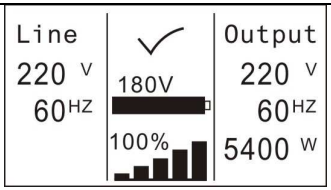
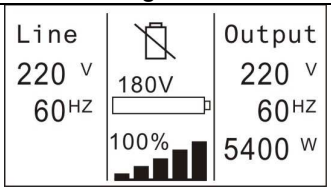
5.2 Operating mode

The different graphic symbol could be displayed corresponding to current operating mode or status.

Table 5-3 Status Summary Screens

Status Summary Screen	Description
 **Fig 5-3**	**Normal mode:** The UPS is operating in Normal mode from utility power.
 **Fig 5-4**	**Battery mode:** When the UPS is running in battery mode, the buzzer beeps once every 4 seconds.
 **Fig 5-5**	**Bypass with output:** The UPS does not have the backup function when it is in bypass mode. The power used by the load is supplied from the utility power via internal filter. The UPS will beep once every 2 minutes in bypass mode.
 **Fig 5-6**	**Bypass without output:** The UPS in bypass mode without output
 **Fig 5-7**	**High Efficiency Mode:** After the UPS is turned on, the power used by the load is supplied from the utility power via internal filter while the utility power is in normal range, so the high efficiency could be gained in the HE mode. Once the mains is loss or abnormal, the UPS would transfer to Line mode or Battery mode and the load is supplied continuously. 1) The function could be enabled

	through the LCD setting or the software (Winpower, etc.). 2) It is attention that the transfer time of UPS output from HE mode to battery mode is about 10ms. But it is still too long for some sensitive load.
 **Fig 5-8**	**Converter mode** In converter mode, the UPS would free run with fixed output frequency (50Hz or 60Hz). Once the mains is loss or abnormal, the UPS would transfer to battery mode and the load is supplied continuously. 1) The function could be enabled through the LCD setting or the software (Winpower, etc.). 2) The load should be derating to 70% in converter mode.
 **Fig 5-9**	**Warning:** When the warning occurs, it illustrates that there are some abnormal problems during the operation of UPS. Normally the problems are not fatal and the UPS continues working, but they should be paid attention to, or the UPS may fail.
 Fig 5-10	**Fault:** When the fault occurs, it illustrates that some fatal problems happened, the UPS would directly cut off the output or transfer to bypass, and keep alarming. The backlight of LCD would also turn to red.

 **Fig 5-11**	**Overload:** When the UPS is overload, the alarm will beep twice every second. Some unnecessary loads should be get rid of one by one to decrease the loads connected to the UPS.
 **Fig 5-12**	**Battery Test** UPS is executing a battery test
 **Fig 5-13**	**Battery fail:** if the battery status detected is “bad battery detected” or “battery disconnected”, the symbol of battery failure would be shown and UPS would alarm.

5.3 Turning on and Turning off UPS

Attention: The UPS could only be turning on while connecting with the utility at the first time.

Attention: Please switch off the connected loads first before turning on the UPS, and switch on the loads one by one after the UPS is turned on. Switch off all of the connected loads before turning off the UPS.

5.3.1 Turning on UPS with utility

1) Check all the connection is correct.
2) Power on the UPS, the fan begins to rotate, LCD will show the “WELCOME” logo. Then LCD will show the default UPS status summary screen after UPS finishing self-test.
3) By pressing ⏻ button continuously for more than 1

second, the buzzer will beep 1s, UPS starts to turn on.

4) A few seconds later, the UPS turns into Line mode. If the utility power is abnormal, the UPS will transfer to Battery mode without output interruption of the UPS.

5.3.2 Turning on UPS without utility

1) Check all the connection is correct.
2) By pressing ⏻ button continuously for more than 100ms, the UPS would be powered on. At this time the fan begins to rotate, LCD will show the “WELCOME” logo. Then LCD will show the default UPS status summary screen after UPS finishing self-test.
3) By pressing ⏻ button continuously for more than 1 second, the buzzer will beep 1s, UPS starts to turn on.
4) A few seconds later, the UPS turns into Battery mode. If the utility power comes back, the UPS will transfer to Line mode without output interruption of the UPS.

5.3.3 Turning off UPS with utility

1) To turn off the inverter of UPS by pressing ⏻ button continuously for more than 3 seconds and the buzzer will beep 3s. The UPS will turn into Bypass mode at once.
2) When completing the above action, UPS output voltage is still present. In order to cut off the UPS output, simply cut off the utility power supply. A few seconds later, LCD display shuts down and no output voltage is available from the UPS output terminal.

5.3.4 Turning off UPS without utility

1) To power off the UPS by pressing ⏻ button continuously for more than 3 second, and the buzzer will beep 3s. The UPS will cut off the output at once.

2) A few seconds later, LCD shuts down and no voltage is available from the UPS output.

5.4 LCD operation

Except the default UPS status summary screen, the user could get more useful information about UPS current status, detailed various measurements, old events which ever occurred, UPS own identification, and could change the settings to fit the user own requirements, optimize the function of UPS.

5.4.1 The main menu

In the default UPS status summary screen, when pressing ◀ or ▶ <1s, the detailed information about alarm, the system status, battery would be shown.
In the default UPS status summary screen, when pressing ◀ >1s, the display would enter main menu tree.
The main menu tree includes six branches: UPS status menu, event log menu, measurement menu, control menu, identification menu, setting menu.

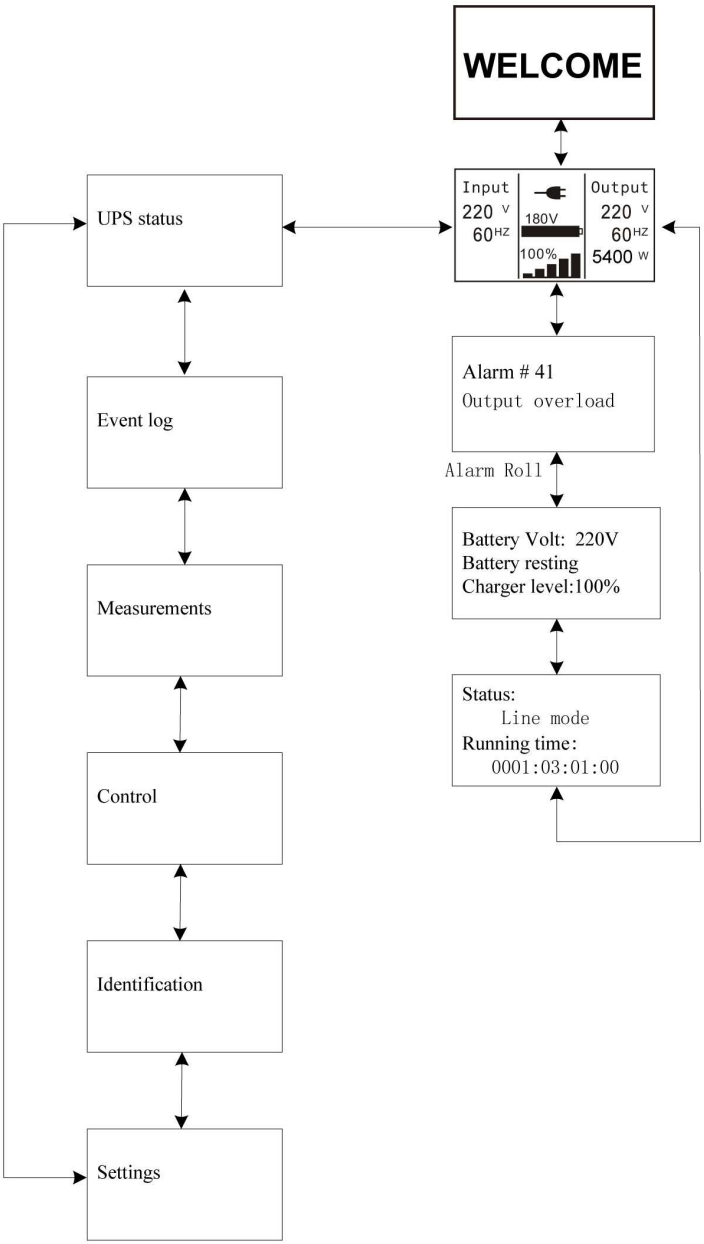


Fig. 5-14 Main menu tree

5.4.2 The UPS status menu

By pressing ↵ on the menu of “UPS status”, the display would enter the next UPS status menu tree.

The content of UPS status menu tree is same as the default UPS status summary menu.

By pressing ◀ >1s, the display would return the last main menu tree.

The detail information about “UPS status”, please see Fig5-14

5.4.3 The event log menu

By pressing ↵ on the menu of “Event log”, the display would enter the next event menu tree.

All the old event, alarm and fault have been recorded here. The information includes the illustration, the event code, and the operating time of UPS when the event happened.

By press ◀ or ▶ <1s, all the event could be displayed one by one.

The max number of record is 50, when the number is larger than 50, the oldest one would be changed to the newest information.

By pressing ◀ >1s, the display would return the last main menu tree.

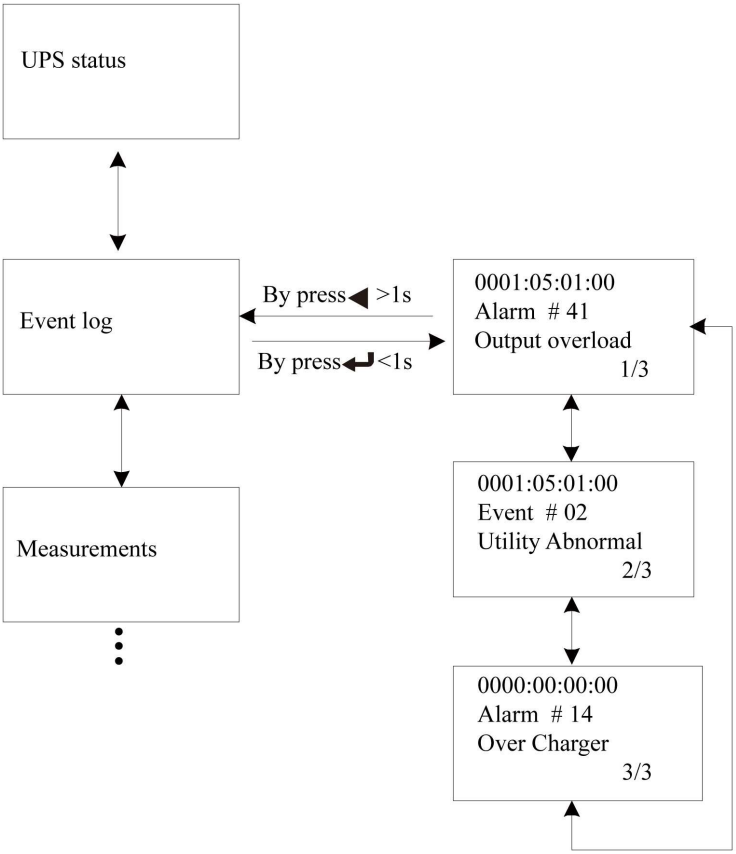


Fig. 5-15 Event menu tree

5.4.4 The measurement menu

By pressing ↵ on the menu of “Measurement”, the display would enter the next measurement menu tree. A lot of detailed useful information could be checked here, Ex. the output voltage and frequency, the output current, the load capacity, the input voltage and frequency, etc. By pressing ◀ >1s, the display would return the last main menu tree.

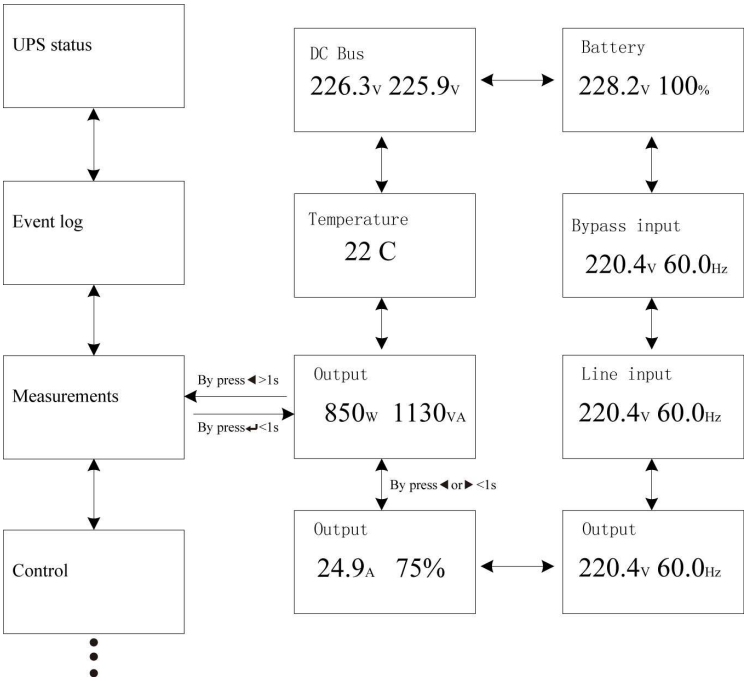


Fig. 5-16 Measurement menu tree

5.4.5 The control menu

By pressing ↵ on the menu of “Control”, the display would enter the next control menu tree.

1) Start Battery Test: is one command to control the UPS to do the battery test.
2) Clear EPO status: once EPO status is enabled, the UPS output would be cut off. To recover to normal status, first EPO connector should be closed, and enter this menu to clear EPO status, then UPS would stop alarm and recover to Bypass model. And UPS needs be turned on by manual operation.
3) Reset Fault status: when fault occurs, UPS would keep in Fault mode and alarm. To recover to normal status,

enter this menu to reset error status, then UPS would stop alarm and recover to Bypass mode. And the reason of fault should be checked and deleted before UPS is turned on again by manual operation.

4) Restore factory settings: all the settings would be recover to default factory settings. It could only be done in Bypass mode.

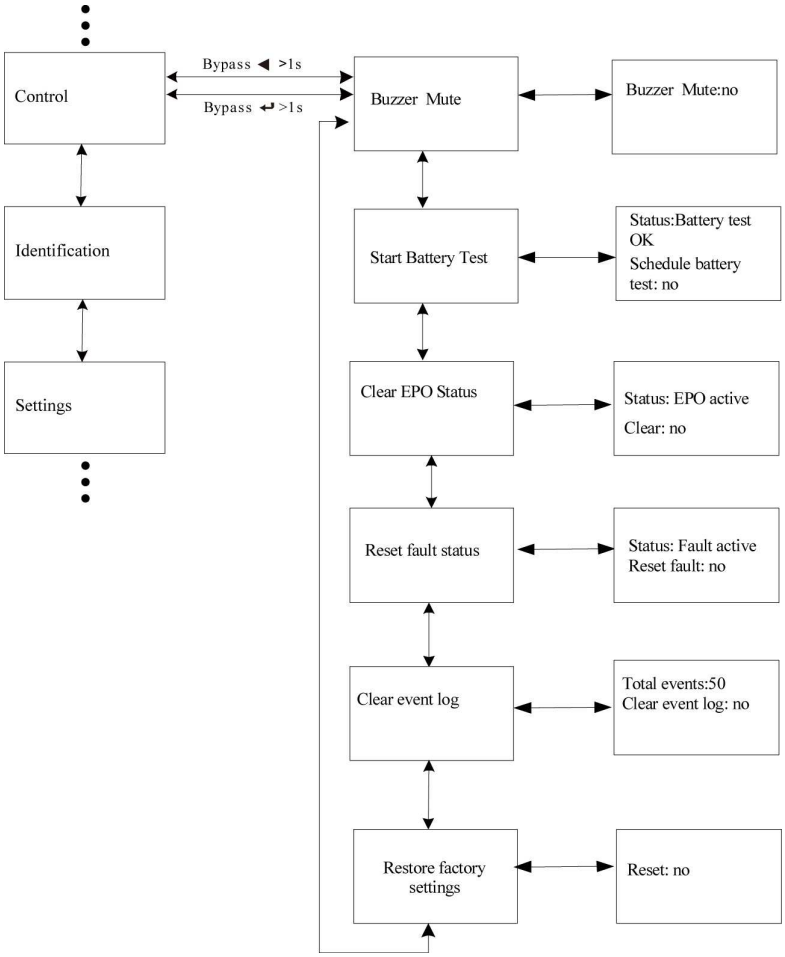


Fig. 5-17 Control menu tree

5.4.6 The identification menu

By press ↵ on the menu of “Identification”, the display would enter the next identification menu tree.
The identification information includes UPS serial number, firmware serial number, model type, would be shown here.
By press ◀ >1s, the display would return the last main menu tree.

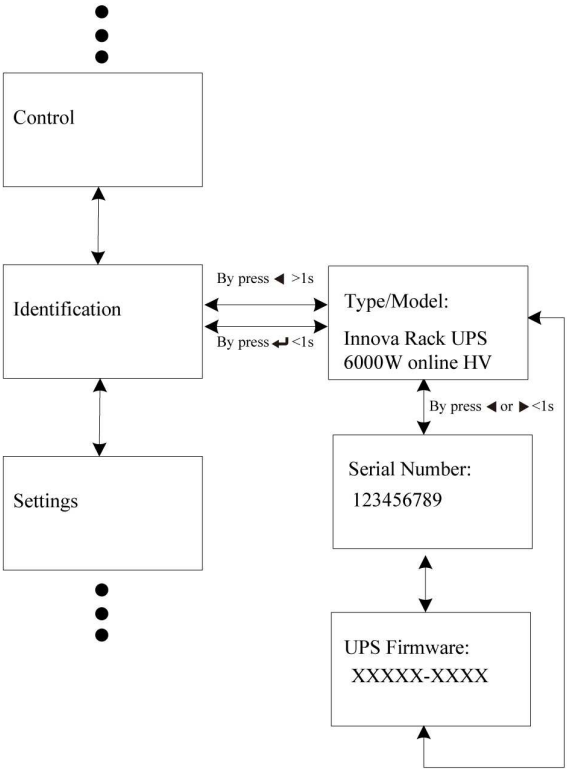


Fig. 5-18 Identification menu tree

5.4.7 The setting menu

Please contact your local distributor for further information before using the settings. Some settings would change the specification, and some settings would enable or disable some functions. The unsuitable option set by user may

result in potential failures or protecting function loss, even directly damage the load, battery or UPS.
The most of settings could only be done while UPS is in Bypass mode.

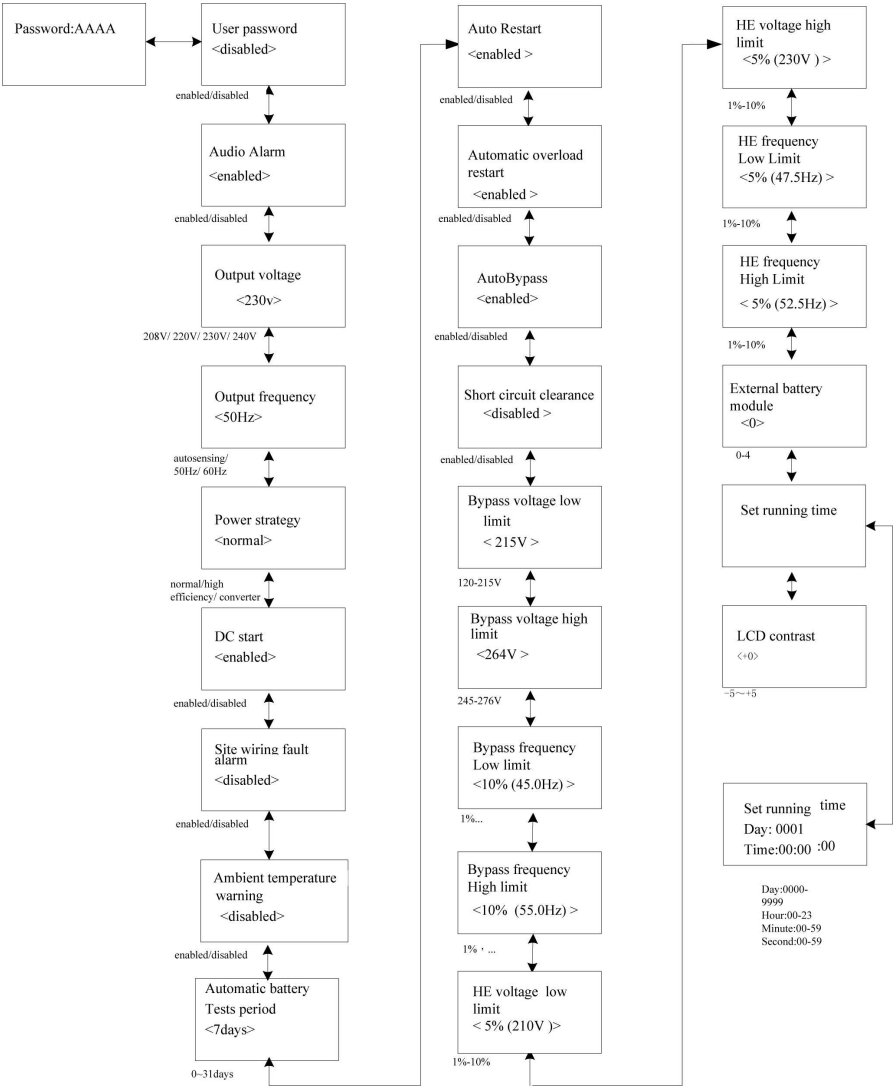


Fig. 5-19 Setting menu tree

Example: set rated output voltage value

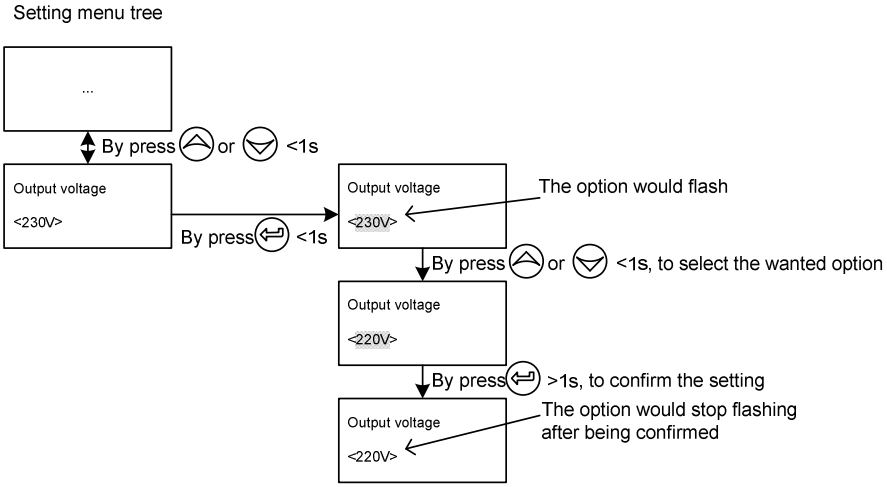


Fig. 5-22 Set rated output voltage value

6. UPS Maintenance

This chapter explains how to:

- Care for the UPS and batteries
- Transport the UPS
- Store the UPS and batteries
- Test the batteries
- Recycle the used Battery or UPS

6.1 UPS and Battery Care

For the best preventive maintenance, keep the area around the UPS clean and dust-free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner. For full battery life, keep the UPS at an ambient temperature of 25℃ (77℉)

Note: The batteries in the UPS are rated for a 3-5 year service life. The length of service life varies, depending on the frequency of usage and ambient temperature. Batteries used beyond expected service life will often have severely reduced runtimes. Replace batteries at least every 5 years to keep units running at peak efficiency.

6.2 Transporting the UPS

NOTE: The internal UPS batteries MUST be disconnected before transport.

CAUTION: The following procedure should be performed or supervised by personnel knowledgeable about batteries and the required prec aution. Keep unauthorized personnel away from batteries.

If the UPS requires any type of transportation, the batteries must be disconnected (but not removed) before the unit is transported:

1. Verify that the UPS is off and disconnected from utility power.
2. Place the UPS on a flat, stable surface with the front of the cabinet facing you.
3. Remove the UPS front cover

4. Disconnect the internal battery connectors
5. Replace the UPS front cover

6.3 Storing the UPS and Batteries

If you store the UPS for a long period, recharge the battery every 6 months by connecting the UPS to utility power. The batteries charge to 90% capacity in approximately 4 hours. However, it is recommended that the batteries charge for 48 hours after long-term storage.

Check the battery recharge date on the shipping carton label. If the date has passed and the batteries were never recharged, do not use the UPS. Contact your service representative.

When to Replace Batteries

When the status summary screen displays the UPS fault icon with the “Service Battery” alarm and the audible alarm sounds continuously, the batteries may need replacing. Contact your service representative to order new batteries.

6.4 Testing Batteries

For a battery test, please check:

- The batteries must be fully charged.
- The UPS must be in Normal mode with no active alarms.
- The load must be higher than 10%.

To test batteries:

1 Connect the UPS to utility power for at least 48 hours to charge the batteries.

2 Press the button for one second to go to the main menu selection and scroll down to the Control menu using the button.

3 Press the button to enter the Control menu.

4 Use the button to scroll to the Battery Test option.

5 Press the button to start the battery test.

During the battery test, the UPS transfers to Battery mode and discharges the batteries for 25% of the original expected runtime. The status screen displays “Battery test running” and the percentage of the test completed. The results display on the UPS status screen as completing.

6.5 Recycling the Used Battery or UPS

Contact your local recycling or hazardous waste center for information on proper disposal of the used battery or UPS.

7. Specifications

This chapter provides the following specifications:

- Model list
- General Specification
- Electrical Performance
- Environmental and Safety

Table4. Model list

UPS Model	6K model	10K model
EBM Model	180V EBM	240V EBM

Table5. General specification

Model		**6K**	**10K**
Power Rating		6KVA/5.4KW	10KVA/9KW
Frequency (Hz)		50/60	50/60
Input	Voltage	(120-276)VAC	(120-276)VAC
	Current	32A max.	55A max.
Battery	Voltage	180VDC	240VDC
	Current	38A max	52A max
Voltage		208VAC/220VAC/ 230VAC/ 240VAC	208VAC/220VAC/ 230VAC/ 240VAC
Current		28A	46A
Dimension (WxDxH) mm		438 x 698 x 129	438 x 704 x 215.5
Weight (kg)		46 kg	82.5Kg

Table6. Electrical performance

Input			
Model	Voltage	Frequency	Power Factor
6K/10K	Single-phase	50/60 Hz±10%	>0.99(@Full load)

Output					
Voltage Regulation	Power Factor	Frequency tolerance	Distortion	Overload capacity	Current crest ratio
±1%	0.9 lag	Synchronized 50/60Hz±10% in Line mode (AC mode) ±0.1% of normal frequency in Battery mode	THD<2% Full load (Linear Load)/ <5% for reference non-linear load	102%-130% load transfers to Bypass mode after 2 minutes >130% load transfers to Bypass mode after 30 second and shutdown the output after 1 minute	3:1 maximum

Table7. Environment and safety

Temperature	Humidity	Altitude	Storage temperature
0°C-40°C	<95%	<1000m	0°C-40°C

Note: if the UPS is installed or used in a place where the altitude is above than **1000m**, the output power must be derated in use, please refer to the following:

Altitude (M)	1000	1500	2000	2500	3000	3500	4000	4500	5000
Derating Power	100%	95%	91%	86%	82%	78%	74%	70%	67%

Safety		IEC/EN 62040-1-1
EMI	Conducted Emission	IEC/EN 62040-2
	Radiated Emission	IEC/EN 62040-2
EMS	ESD	IEC/EN 61000-4-2 Level 4
	RS	IEC/EN 61000-4-3 Level 3
	EFT	IEC/EN 61000-4-4 Level 4
	SURGE	IEC/EN 61000-4-5 Level 4
	CS	IEC/EN 61000-4-6 Level 3
	Power-frequency Magnetic field	IEC/EN 61000-4-8 Level 3
	Low Frequency Signals	IEC/EN 61000-2-2

8. Troubleshooting

The online series UPS is designed for durable, automatic operation and issues alarms to alert you whenever potential operating problems occur. Usually the alarms shown by the control panel do not mean that the output power is affected. Instead, they are preventive alarms intended to alert the user. Active alarms are accompanied by an audible buzzer.

The control panel provides troubleshooting information from two main menus:

- UPS status menu: Access to all active alarms
- Event Log menu: Access to the most recent 50 events, which may include active and closed alarms

8.1 Typical Alarms and Conditions

Alarm or Condition	Possible cause	Action
ON Maintenance Bypass Alarm Code: 72	UPS was manually commanded to switch to bypass and will remain in bypass until commanded out of bypass	Check the maintain bypass switch status
In Battery Mode Alarm Code: 62	A utility failure has occurred and the UPS is in Battery mode.	The UPS is powering the equipment with battery power. Prepare your equipment for shutdown.
In Eco Mode Alarm Code: 63	The UPS is on bypass while operating on the High Efficiency setting.	The equipment transferred to bypass utility power as a normal function of High Efficiency operation. Battery mode is available and your equipment is protected.
Epo Active Alarm Code: 71	The external contacts in the rear of the UPS are configured for REPO operation and they have been activated.	Check the EPO connector status

Site Wiring Fault Alarm Code: 04	Site Fault detection is supported on all models anytime there is a Grounding Neutral connection. Alarm triggers when the difference between ground and neutral voltage is > 15v.	Site Fault detection should be enabled by default. It can still be enabled / disabled from the LCD settings menu. Reconnect all input wires
Utility Abnormal Alarm Code: 02	Utility is out of the tolerance of input	Check input mains condition
Back feed Alarm Code:93	UPS has a unexpected bypass current on battery mode	Transfer to maintenance bypass and call service.
Battery Disconnect Alarm Code:11	Battery voltage is lower than the batteries disconnected level defined for this UPS. This may be due to a blown fuse, intermittent battery connection or battery cable being disconnected.	Verify that all batteries are properly connected. If the condition persists, contact your service representative.
Battery low Alarm Code:12	The UPS is in Battery mode and the battery is running low	This warning is approximate, and the actual time to shutdown may vary significantly. Depending on the UPS load and number of Extended Battery Modules(EBMs), the “Battery Low” warning may occur before the batteries reach 25% capacity
Service Battery Alarm Code:13	A faulted battery string has been detected and as a result the battery charger has been disabled until it is replaced	Contact your service representative

Output Overload Alarm Code:41	Output is overload.	Remove some of the equipment from the UPS. The UPS continues to operate, but may switch to Bypass mode or shutdown if the load increases. The alarm resets when the condition becomes inactive.
Inv Overload Fault Alarm Code:42	UPS has transferred to bypass or fault mode because of overload in inverter mode	The UPS transfers to Battery mode if supporting the load. Remove some of the equipment from the UPS
Byp Overload Fault Alarm Code:43	UPS has cut off the output and transferred to fault mode because of overload in bypass mode or HE mode.	Remove some of the equipment from the UPS
Output Short Circuit Alarm Code:31	Indicates that the UPS has detected abnormally low impedance placed on its output and considers it a short circuit	Remove all the loads. Turn off the UPS. Check if UPS output and loads is short circuit. Ensure short circuit is removed before turning on again.
Fan Lock Alarm Code:85	Indicates that the fan could not work normally.	Check fans of UPS
Heatsink Over Temperature Alarm Code:86	Indicates that the temperature of heatsink is too high, UPS will get over temperature fault soon.	If the UPS transferred to Bypass mode, If the condition persists, shut down the UPS. Clear vents and remove any heat sources. Allow the UPS to cool. Ensure the airflow around the UPS is not restricted. Restart the UPS.
Ambient Over Temperature Alarm Code:82	Indicates that the ambient temperature is higher than the operation temperature on specification	

BUS Over Voltage Alarm Code:21	Indicates that the UPS get BUS over voltage fault because of BUS.	The UPS transfers to Bypass mode if supporting the load
BUS Under Voltage Alarm Code:22	Indicates that the UPS get BUS under voltage fault	The UPS transfers to Bypass mode if supporting the load
BUS Voltage Unbalance Alarm Code:23	Indicates that the positive BUS voltage and negative BUS voltage are too lopsided to fault	The UPS transfers to Bypass mode if supporting the load
BUS Short Alarm Code:24	Indicates that the BUS voltage decrease very fast	Contact your service representative
BUS Softstart Fail Alarm Code:25	Indicates that the BUS could not soft start successfully	Contact your service representative
Inv Over Voltage Alarm Code:32	Indicates that the UPS get invert over voltage fault	The UPS transfers to Bypass mode if supporting the load
Inv Under Volatge Alarm Code:33	Indicates that the UPS get inverter under voltage fault	The UPS transfers to Bypass mode if supporting the load
Inv Softstart Fail Alarm Code:34	Indicates that the inverter could not soft start successfully	Contact your service representative
Charger Fail Alarm Code:15	Indicates that the UPS has confirmed the charger has failed	The UPS turns off the charger until the next power recycle. Contact your service representative
Over Charge Alarm Code:14	Indicates that the battery voltage is too high	The UPS will turn off the charger until the battery voltage is normal
Fatal eeprom Fault Alarm Code:A3	Indicates that the UPS could not read eeprom successfully	Contact your service representative

9. Communication

This chapter describes:

- Communication ports (RS-232 and USB)
- Network Management Card (Optional)
- UPS Management Software
- REPO

9.1 RS-232 and USB Communication Ports

To establish communication between the UPS and a computer, connect your computer to one of the UPS communication ports using an appropriate communication cable.

When the communication cable is installed, power management software can exchange data with the UPS. The software polls the UPS for detailed information on the status of the power environment. If a power emergency occurs, the software initiates the saving of all data and an orderly shutdown of the equipment.

The cable pins for the RS-232 communication port are identified in figure 26, and the pin functions are described in Table 3.

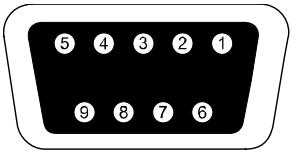
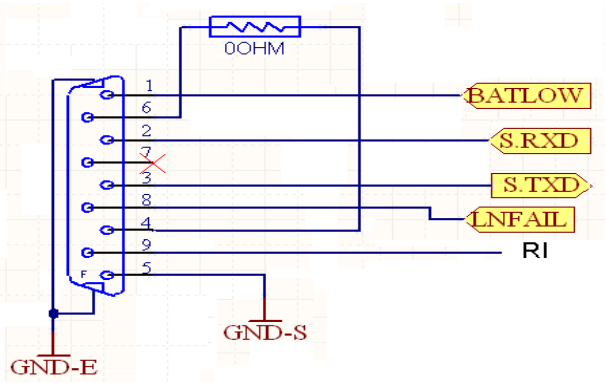


Figure 28. RS-232 Communication Port (DB-9 Connector)

Table 3 RS-232 Communication Port Pin Assignment

Pin Number	Signal Name	Function	Direction from the UPS
1	DCD	Battery Low signal	Out
2	RxD	Transmit to external device	Out
3	TxD	Receive from external device	In
4	DTR	PnP from external device	In

5	GND	Signal common	--
6	DSR	To external device	Out
7	RTS	No connection	In
8	CTS	On Battery signal	Out
9	RI	Vdc Power	Out



RS-232 Communication Port

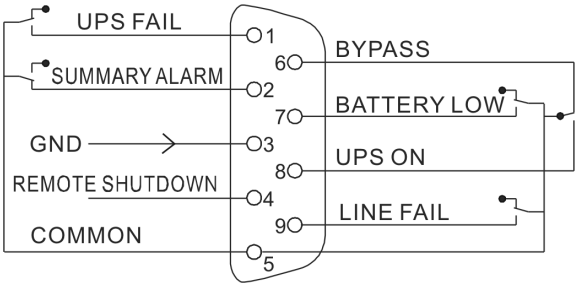
9.2 Network Management Card (Optional)

Network Management Card allow the UPS to communicate in a variety of networking environments and with different types of devices. The Online series has one available communication bay for the following connectivity cards:

- **Connect UPS- MS Web/SNMP Card** – has SNMP and HTTP capabilities as well as monitoring through a Web browser interface; connects to a twisted-pair Ethernet (10/100BaseT) network. In addition.
- This series UPS has AS400 card (an optional accessory) for AS400 communication protocol. Please contact your local distributor for details. The following is the pin assignment and description of DB-9 connector in AS400 card.

Pin #	Description	I/O	Pin #	Description	I/O
1	UPS Fail	Output	6	Bypass	Output

2	Summary Alarm	Output	7	Battery Low	Output
3	GND	Input	8	UPS ON	Output
4	Remote Shutdown	Input	9	Line Fail	Output
5	Common	Input			



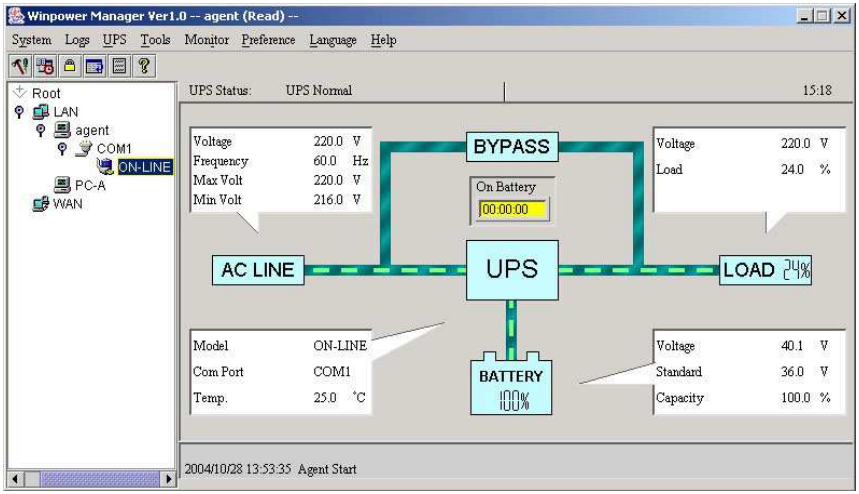
DB-9 Interface of AS400 communication protocol

9.3 REPO FUNCTION

The Remote Emergence Power Off interface provides an emergence power off function. When the REPO function is enabled, once the EPO port is pulled out, the UPS would shut off the output and enter into EPO mode, and the UPS would not respond anything command unless the port is plugged back.

9.4 UPS Management Software

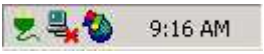
WinPower is UPS monitoring software, featuring user-friendly interface to monitor and control your UPS. This unique software provides complete power protection for computer system while power failure. With the software users can monitor any UPS status on the same LAN. Furthermore, a UPS can provide security protection for more than one computer on the same LAN at the same time, such as shutting down system in security, saving application data and shutting down the UPS when power fails.



Installation procedure:

Connected by USB to a PC or notebook, the Software enables communication between the UPS and the computer. The UPS software monitors the status of the UPS, shuts down the system before the UPS is exhausted and can remotely observe the UPS via the Network (enabling users to manage their system more effectively). Upon AC failure or UPS battery low, UPS takes all necessary actions without intervention from the system administrator. In addition to automatic file saving and system shut-down functions, it can also send warning messages via pager, e-mail etc.

- Use the bundled CD and follow the on-screen instructions to install the software WinPower.
- Enter the following serial No. to install software: 511C1-01220-0100-478DF2A
- After the software is successfully installed, the communication with UPS has been established and an green icon will appear in the system tray.



- Double-click the icon to use the monitor software (as above).
- You can schedule UPS shutdown/start-up and monitor UPS status through PC.
- Detail instructions please refer to the e-manual in the software.

Check www.powerwalker.com/winpower.html from time to time to get the latest version of monitoring software.